



Nunavut

Ingirrasiliqta

Let's Get Moving:
Nunavut Transportation Strategy

From
words
to **WORK**

Department of
Economic Development
& Transportation



Message from the Minister



I am pleased to present *Ingirrasiliqta (Let's Get Moving)*: Nunavut's strategy to realize the potential of our land and adjacent waters for the benefit of our people, and for the benefit of the people of Canada, through the development of a strong, dynamic and interconnected transportation system.

In Nunavut, where we live in small communities, most at great distances from one another and far from the metropolitan centres of southern Canada, we have long understood the importance of transportation to our livelihoods and to our entire way of life.

In recent years, this understanding has extended to all Canadians, who now realize that their economy, and their sovereignty and security, depends on their connections to our territory, and on our ability in Nunavut to keep strong and develop the vital transportation network that links our communities to each other and to the rest of the country.

This strategy provides a stirring vision of the future of our territory, enabled by a vibrant and strengthened transportation system. This system will support the development of Nunavut's economy and the achievement of a high and sustainable quality of life for our people, and it will allow us to play our strategic role in Canada.

But this strategy also provides a frank assessment of where we are today. It points out the great distances we have yet to travel to reach our goals and to attain our full potential in the development of the country.

I am confident that we will get there. This confidence is based on the achievement of our transportation goals in the past, and on our construction, in some of the most challenging conditions in the world, of the safe, efficient, flexible, and reliable transportation system we use today. Now we will take the next steps and move this system into the future.

Ingirrasiliqta (Let's Get Moving): Nunavut Transportation Strategy maps out the ways we will invest in programs, infrastructure and our workforce to reach our goals. In the past ten years, the Government of Nunavut has achieved a great deal in developing a sustainable economy and healthy communities to support our growing population. For the transportation system to continue to enable this development, and meet the needs of Nunavummiut and all Canadians, it will have to grow as well.

A handwritten signature in dark ink, appearing to read 'Peter Taptuna'.

The Honourable Peter Taptuna

Minister of Economic Development & Transportation

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Introduction

The potential wealth of Nunavut is vast and varied, and it is our task to turn this potential to the advantage of Nunavummiut and the rest of Canada. To do this, our transportation system must be transformed from one that merely circumscribes the great area of land and sea from which the wealth of the territory will be drawn, to one designed to reach into it, and link us to that potential.

Nunavut's current transportation system was designed primarily to enable administration rather than to grow an economy. As the system currently exists, our communities are viewed as destinations, or isolated points, and the object of the system is to deliver basic services and necessities to those points, but not beyond.

To date, the area between communities has been treated as a barrier – a great distance with little or nothing to offer.

This is obviously not an acceptable situation. Nunavut literally translates as "Our Land", which is fitting, in that our territory covers one-fifth of Canada, and is bounded by 40% of the country's coastline. The wealth of our land is contained in its size, and realizing that wealth will require accessing as much of that land as possible.

The *Nunavut Economic Development Strategy* (2003) identified our minerals and petroleum, our furs and fish, our tourist destinations, and our unique culture and art as the key foundations of our future development. Separate strategies for each of these strategic sectors have been developed by the Government of Nunavut over the past several years.

All of the strategies identified the lack of transportation options as an obstacle to developing the potential of these sectors. If this territory is to move forward as a contributing partner in Canada, it is essential to invest in bringing the accessibility of our great wealth in line with those of other jurisdictions in Canada and around the world.

This will take careful planning. Transportation infrastructure is expensive. It is important that investment in it is well thought out to meet the long-term needs of the entire territory. In order to assure sustainability, infrastructure must be well situated and must serve more than one purpose when possible.

Settling the area that was to become Nunavut raised several expectations. One was that the essentials of medical care, schooling, public administration, and justice would be available to all citizens in all communities. Creating the territory of Nunavut raised another expectation; that opportunity would follow. Until transportation infrastructure is in place, that second expectation may never be fulfilled.

Vision

We see a Nunavut where the vastness of our land is a blessing, not a barrier. It is a place where Nunavummiut have convenient access to opportunities and to each other.



Mission

We will build a transportation system that enables full participation of Nunavummiut in Canada and its economy.

We should all have what we need

In *Tamapta: Building Our Future Together*, the Government of Nunavut urges us to work together with our families and communities to ensure the following:

- Safety
- A sense of belonging and purpose
- Education and opportunities to learn
- Personal responsibility
- Stewardship of our environment and wildlife
- Affordable, healthy food, safe water, and a home
- Access to the land for personal growth
- Family support and friendship
- Communication in our preferred language
- Pride in our culture and who we are
- Opportunities for fun, recreation and cultural activities.

Guiding Principles

The Government of Nunavut is guided by Inuit societal values. *Ingirrasiliqta* is committed to the following principles:

- **Inuuqatigiitsarniq**: respecting others, relationships and caring for people.
- **Tunnganarniq**: fostering good spirit by being open, welcoming and inclusive.
- **Pijitsirniq**: serving and providing for family and/or community.
- **Aajiiqatigiinniq**: decision making through discussion and consensus.
- **Pilimmaksarniq/Pijariuqsarniq**: development of skills through discussion and consensus.
- **Piliriqatigiinniq/Ikajuqtigiinniq**: working together for a common cause.
- **Qanuqtuurniq**: being innovative and resourceful.
- **Avatittinnik Kamatsiarniq**: respect for the land, animals and environment.

Executive Summary

The 2001 *Nunavut Transportation Strategy* was the first comprehensive study to focus exclusively on transportation in an area that had previously been considered only in the context of the Northwest Territories. It was a highly detailed document, comprised of a Vision, a Technical Document and several Appendices of data.

Following seven years, *Ingirrasiliqta* is anchored in the original strategy, but attempts a much narrower focus. Through taking into account the improvements we have made to date, the lessons we have learned, and the continuing dialogue since publication of the first strategy, this document contains specific actions that the Government of Nunavut intends to take to improve our lives and enable our economic growth.

An analysis of any transportation system must begin by looking at the geographical area it is meant to cover, and at the type of goods and services it is meant to deliver. Once those key factors are understood, decisions can be made as to which mode best delivers which functions, and how those modes can be brought together to minimize cost, maximize efficiency, and ensure the system is sustainable over the long term.

No single transportation mode is ideally suited to all needs of a healthy economy. People and perishable goods moving point to point over long distances are best moved by air, but the mode is expensive and poorly adapted to heavy or oversized loads. Heavy goods and bulk commodities are most efficiently moved by ship, but movement is slow, the season short, and access to tidewater is needed. Roads offer the most flexibility and medium cost, but the cost of infrastructure is much higher than that of the other modes. An effective and sustainable transportation system for Nunavut will require improvement in all modes. It will also require linking the modes together in strategic locations.

The system of airports currently found in Nunavut was intended to deliver people, services and perishable goods from southern locations into our communities in the shortest time possible; the system of rudimentary sealift beaches was intended to move heavy durable goods from southern locations to those same communities on a seasonal basis. There is no surface component to bridge the large gap between these two modes.

From outside Nunavut, this has historically been seen as an adequate system for the territory's needs. People and services could move within the territory and between it and southern centres; food is available year round; materials to construct housing and basic infrastructure can be brought in during the short summer. There is a basic utility to the system.

The utility of this system remains necessary; and we must maximize the efficiency of this current system to maintain our current quality of life. **Part One** of this Strategy is entitled **Getting More from What We Have**, and examines this historic and basic system.

Certain infrastructure needs are addressed in **Part One**, but the emphasis is on operation and policy improvements that we will undertake to ensure stability, viability, and increased efficiency in delivering essential core transportation services to our communities.

In contrast, **Part Two: Building a Foundation for the Future**, focuses more on our infrastructure requirements. It recognizes that Nunavut's economic opportunities are found outside of our communities, and a transportation system must be designed to access the wealth surrounding our communities instead of just providing them with essential service.

In **Part Two** we detail our needs to access the land and the sea, to bring our communities together, and to connect the bounty of Nunavut to Canada and to markets beyond.

Building a transportation system that serves our needs will require the cooperation of all parties with an interest in our territory's development. Roles for the federal government, for private industry, for our communities, and for the Government of Nunavut are discussed in **Part Three: Finding the Resources**.

Ingirrasiliqta is therefore more than a list of needed projects. It is a guide to how we will enable our present system to deliver what it was intended for; how we will prioritize projects that will open up our future; and how we will work with our partners to realize Nunavut's great potential.



Part One: Getting More From What We Have

The existing transportation system is essential to our ability to exist in Nunavut. We will make it safer, more efficient, and more effective.

Most of the food we eat comes by air; what we harvest is transported from the land or the sea; our shelter, and the fuel that heats it, arrives by ship. These are necessities – as essential to life in Nunavut as anywhere else – and our present day transportation system is what allows us to access these necessities.

There are limits, however, to how well our present system delivers those essentials. Due to the high cost of transportation, amenities people in other Canadian jurisdictions take for granted are often unaffordable or unavailable in Nunavut.

The Government of Nunavut spends over \$85 million dollars per year on travel and transportation. This is nearly equivalent to current Government of Nunavut capital allocations. The cost to fly a family of four from Grise Fiord to Ottawa return is \$20,000, equivalent to a modest annual mortgage payment. Goods brought in from outside the territory have a premium of up to \$18 dollars per kilogram. Obviously the high cost of transportation means both the government and the family have difficult choices to make when prioritizing spending.

Section: Infrastructure

Transportation systems bridge the gap between communities, suppliers and markets. While only a portion of the system infrastructure is located in any specific community, it is important to recognize that an inefficient part anywhere in the system can limit the way the entire system operates.

OBJECTIVE 1 Assure the safety, reliability and utility of the system through adequate maintenance and renewal.

The usability and convenience of a transport system is unfortunately closely related to the complexity and expense of its infrastructure. Roughed-in trails, helicopter landing pads and natural anchorages require very little maintenance or investment, but are not suited for moving goods and people in any quantity. Improving these structures to

higher quality roads, runways and proper ports increases their safety, reliability and overall capacity but this investment requires continuous maintenance and periodic renewal to protect the gains in safety and capacity necessary for the social and economic health of the communities.

Action 1.1

Nunavut will ensure adequate funding to support the existing transportation system.

Most of the transportation infrastructure in Nunavut was built in the 1970s. Some of it has been in place since the 1940s. After thirty years of growth in our communities, the system has reached its limits in terms of capacity. If the infrastructure is allowed to deteriorate, safety and reliability will be compromised, threatening our ability to deliver essential services to all Nunavummiut.

Ongoing work to sustain airport infrastructure includes granular production for runway surfaces, heavy equipment replacement, renewal of electrical systems and new air terminal buildings. In the marine sector, yearly maintenance is required to rebuild barge landing pushouts, remove boulders and other deposits from beach areas and channels, improve cargo marshalling areas, and replace and strengthen anchoring and mooring systems.

While these projects are necessary to ensure our transportation system operates properly, they are generally considered low profile. Consultations undertaken by the Nunavut Association of Municipalities did not identify projects of this type among community priorities.

A 20-year transportation capital needs assessment undertaken in 2006 demonstrates that investment in the infrastructure we currently rely on requires \$10 million per year for basic life cycle management and minor improvements. The importance of the transportation system must be stressed to the communities and must be considered in an integrated approach to community planning.

OBJECTIVE 2 Assure the integrity of the Nunavut transportation system by ensuring every community has infrastructure adequate for its needs within that system.

In Nunavut, the airport system is centred on regional hubs which provide access to and from other jurisdictions. These hubs are Iqaluit, Rankin Inlet and Cambridge Bay. The airports in these communities are configured for jet aircraft like the Boeing 737-200. Iqaluit is also connected to international destinations and includes a Canadian Border Services Agency (CBSA).



Smaller aircraft move passengers and freight from hubs to other communities. For routing purposes and efficiency, the same aircraft type should be able to access every community outside the hub. This allows flexibility of routing, better use of aircraft, and a much better platform for competition – all of which have the potential to lower costs.

Investment in Nunavut's airports has not kept pace with normal wear and tear or the changes that have occurred in air transport since the airports were built. Modern aircraft have become faster, quieter, more efficient and more comfortable; however, this increase in performance means that many aircraft cannot access all of our airports.

The Nunavut marine system is more linear in nature. Goods are generally shipped directly from the southern port of departure to communities without being unloaded or trans-shipped onto different vessels.

Marine transport has also undergone change in recent years. Barge and tug operations and smaller vessels with the ability to come in close to the communities for offloading operations are being phased out in favour of larger vessels, which anchor offshore and shuttle goods to the communities by barge.

These changes in aircraft and ships will not provide the maximum benefit until our infrastructure allows the carriers to take proper advantage of their improved fleets.

Roads do not yet play a significant role in supplying Nunavummiut with essential goods and services. The small network of trails does, however, factor into the economy of many communities.

Action 2.1

Enhance the current airport system.

The runway is the airport's main safety component, and it is critical that Nunavut's runways are built to serve the type of aircraft that will be landing on them.

The newer generation ATR-42, SAAB 340 and Dash-8 are more efficient than the previous generation of aircraft, but require longer and smoother runways. Not all of Nunavut's communities have runways that meet the standards required to land these new aircraft.

The air carriers, through a resolution passed by the Northern Air Transport Association (NATA), have requested that all three territories establish 5000 feet as a minimum length for runways. This is not possible in all of our communities, and may not be practical or necessary in others. It is important to determine the optimum runway length for each community through a runway needs assessment.

Once the optimum length of each community's runway has been determined, the department will develop comprehensive Standards & Criteria to ensure that other airport structures properly reflect the needs of both the community and the system as a whole.

In Nunavut, the life cycle of airport infrastructure is often shortened by the effects of weather on unstabilized gravel surfaces and a lack of proper storage for heavy equipment. Life cycle management investments, such as heavy equipment storage and runway surface stabilizing materials, will be included in the Standards & Criteria. Runway stabilization will provide the added advantage of reducing dust in many communities.

Action 2.2

Enhance the current marine resupply system.

The marine resupply system will continue to be essential for bringing building materials, fuel, vehicles and non-perishable goods into the territory.

There have been changes in marine supply delivery to some communities due to changes in the government's resupply tendering process. The arrangement of a simple push-out and shore cables is no longer suitable for ocean tankers and freighters, that anchor farther offshore than the barges previously in use. Mooring for these operations requires proper bollards, mooring chains and bedrock anchors, to increase safety and reduce the likelihood of accidents or spills.

Consequently, there are inconsistencies in the suitability of infrastructure to support resupply. Marine safety is dictated by local conditions. Extensive consultation with marine carriers will be carried out during the course of developing Standards & Criteria.

Action 2.3

Enhance the Community Access Roads Program.

The small but growing network of improved trails and all-wheel drive access roads is necessary for the well-being and cultural continuity of our people. In areas where the trails cross wetlands or rocky ground, they tend to spread out year by year as older trails become washed out or impassable. The result is erosion and runoff, and sprawling tracts of damaged tundra.

Improved trails reduce damage to equipment, allow access by a greater variety of people, and reduce the environmental impact of land travel to frequently used locations.

The Community Access Road Program is currently limited to \$500 thousand per year across the territory. Typical submissions under this program are \$2 million per year. Communities understand the value this program brings to the lives of their people in increased harvesting opportunities, access to recreational areas, historical sites, and granular or carving stone quarry locations. Access roads can also facilitate tourism and commercial development sites.

Section: Policy

OBJECTIVE 3 Rationalize government use of the transportation system.

The Government of Nunavut is the largest single user of transportation services in the territory, and all departments will benefit from improved services and reduced costs. Main estimates for 2008-2009 Government of Nunavut expenditures include \$85 million under the Travel and Transportation heading. Despite these expenditures, the Government of Nunavut has not to date been able to exert very much influence on either pricing or routing.

Action 3.1

Nunavut will revisit the government Air Services Study.

The Department of Community and Government Services, through the Procurement Division, has demonstrated an ability to reduce overall costs in marine supply through contracting practices.

The same is possible in air transport. Nunavut should be able to realize savings and influence routing decisions through detailed analysis of Government of Nunavut expenditures on specific departure/destination pairs and contracting procedures.

Following release of the *2001 Nunavut Transportation Strategy*, the Government of Nunavut invited proposals from air carriers on operating services between Cambridge Bay and Iqaluit. For a number of reasons the move was resisted by the air carriers and no proposals were received.

Action 3.2

Undertake a pilot project to evaluate containerized shipping.

Most of the world is connected by an integrated multi-modal network, where containers are easily shuttled between cargo ships, railroad flatcars, and tractor trailers at terminals designed for quick transfer and minimal loss. Because of the low volumes shipped into Nunavut, not all the advantages in this system are applicable. Nonetheless, it is estimated that shipping full containers could reduce costs by up to 30% compared to current crating and shipping methods used in Nunavut.

In order to maximize the advantages of a containerized system for marine transport, a proper laydown and storage area will be constructed in conjunction with one or more Small Craft Harbour projects.

OBJECTIVE 4 Ensure the governance structure of the airports will meet the needs of the territory.

Other governments, including the federal government, have used the creation of Airport Authorities to encourage both cost reduction and revenue generation to offset costs of running airports. Charging at least the full actual cost for direct services provided to carriers, airport tenants and occasional users of the airports can greatly reduce the support required by government.



Action 4.1

Undertake a study of airport governance models for our airports.

In many Canadian airports, Airport Improvement Fees are charged to passengers to fund capital improvements, and airports receive revenue for operations at the airport that are provided by others who use the airport as their place of business. Typical charges include landing and terminal fees that realistically reflect the cost of providing services, per litre flow-through fee on aviation fuel pumped by others,



charges to exploration companies for freight and fuel storage at the airport, and charges to charter carriers for electrical plug-ins and other services.

Running airports in a more businesslike manner has had both failure and success. Some airports have been able to increase their viability, while others have simply ceased operations. Nunavut's airports are essential services and require assured viability; however improvements may be possible in both cost of operations, and levels of service under a different governance model.

Section: **The Transportation Workforce**

OBJECTIVE 5 Develop the transportation workforce in Nunavut.

It takes many skilled people to keep the infrastructure system operating safely and smoothly. Transportation employment is one of the largest sectors of the economy in Nunavut.

There are an estimated 300 workers involved in aspects of transportation operations for the Iqaluit airport alone. Even in the smallest communities, four or five people are employed full time providing transportation-related services. Many others are employed seasonally in delivery of the sea-lift program.

Action 5.1

Promote careers in transportation.

Workers who are competent and aware of the regulatory environment of transportation are needed in all communities. They have a skill set that is both useful in their home community and highly portable to other communities within Nunavut and beyond.

Even in Nunavut's current limited economy, skills in logistics, dangerous goods handling, warehousing, and the logistics of moving goods from point to point are important. As the Nunavut economy grows, these skills will increasingly be in demand. The Government of Nunavut will develop materials to create an awareness of career opportunities in transportation.

Action 5.2

Develop training programs for transportation workers.

One of the most common entry points into the transportation sector is through the Community Aerodrome Radio Station (CARS) program. This program employs 75 people as Observer/Communicators (O/Cs) throughout the territory, with a presence in all communities except Rankin Inlet and Iqaluit.

Full CARS training is offered through Nunavut Arctic College to those who qualify and are able to get sponsorship through a hamlet or private contractor. Since 2006, this training has been offered through Nunavut Arctic College in Rankin Inlet. The graduation rate from the program has shown a marked increase since the establishment of the school, and other northern jurisdictions have expressed interest in training their own Observer/Communicators at the Rankin Inlet campus.

Training of other transportation workers is undertaken through courses delivered at the regional and site level by regional staff and outside agencies contracted through Nunavut Arctic College. This training is not generally as formal as the CARS program; however, along with the skills gained in day-to-day operations, it is invaluable at the regional and headquarters level.

Transportation workers have historically been difficult to recruit and retain for management positions. Enhancing the training of these workers through the Municipal Training Organization and Nunavut Arctic College will allow for increased opportunity in a "made in Nunavut" workforce.

Section: Operations

OBJECTIVE 6 Build stability and continuity into Airport operations.

Operating an airport requires more than regulatory knowledge and formal training. Knowledge in the day-to-day operations is generally gained over years of managing specific surfaces, snow accumulation, drainage structures, lighting systems, and specialized heavy equipment. In addition, budgeting and managing consumables and labour throughout the year requires knowledge specific to the needs of a particular airport.

Stability and continuity in maintenance and management personnel contributes to safe operations in the airport environment.

Action 6.1

Review the Airport Operations and Maintenance (AOM) Contract.

The contract negotiation process currently used for AOMs has resulted in several contracts that are out of line with the value of the services rendered. Some of them are undeniably low, while others are high.

Across the territory, dissatisfaction with the AOM Contract has been growing over the past several years. This dissatisfaction is not limited to any single party to the contract: the contractors – generally the hamlets – cannot run the airports at a loss; the Government of Nunavut, as owner of the airports, has increasingly demanding regulatory compliance obligations to meet.

Contract values should reflect the value of the services that are expected to be delivered. They must clearly outline the division of responsibilities, and must demonstrate accountability to regulations.

Action 6.2

Provide communities first right of refusal on Airport Operations and Maintenance contracts.

The stability and continuity needed for airport operations is most commonly found within the community government.

As a major stakeholder in the transportation system, the municipalities have the most immediate knowledge of the transportation needs for their communities. In addition, municipal governments generally have the greatest depth of expertise in budgeting, heavy equipment operations, and procurement in the community. Cross utilization of trained staff and other resources needed in both airport operations and municipal works has the potential to benefit the Government of Nunavut.

Part Two: Building a Foundation for the Future

Nunavut requires a transportation system that provides access to economic opportunities and puts us on an equal footing with the rest of Canada.

Realization of Nunavut's potential will require a change in the way goods and people move. As outlined in the *Nunavut Economic Development Strategy*, the future of our home, and the contribution we can make to Canada, lies in processing fish we ship to market; in moving ore via land and sea to smelters; in navigating our petroleum safely through our waters to refineries; in welcoming tourists; and in bringing heavy goods and industrial materials into our territory when they're needed, rather than when the boat lands.

These are reasonable expectations – moderate even, for most other residents in Canada. Meeting them will require significant and dedicated investment, and a faith in the potential of Nunavut.

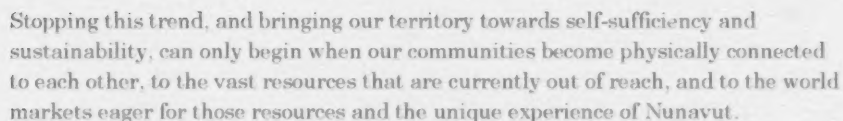
Section: Connecting Nunavut to Canada

Nunavut is the only jurisdiction in North America that remains entirely isolated from the National Highway System and the land-based North American Trade Corridor. The enormous potential of our land and surrounding waters remains untapped; while our people feel their participation in the Canadian way of life is not at the same level as that of other Canadians.

Our nearly year-round reliance on air travel has recently demonstrated the potential to cripple our growing economy and ability to deliver basic services. Not only is air transport the mode most directly affected by the cost of petroleum fuels, the lack of all-season connections other than air makes it difficult to break the pattern of delivering bulk petroleum fuels only during the summer months, when prices tend to be at their highest.

Between 1960 and 1983, Canada, through Indian and Northern Affairs Canada (INAC) and Public Works Canada (PWC), constructed approximately 2000 kilometres of all-weather access roads in the Northwest Territories. No major road projects were undertaken in the area that would later become Nunavut. This lack of development in Nunavut established the fundamental difference in economic development and maturity between what became two territories.

Nunavut air service (2008)



OBJECTIVE 7 Improve our air links to Canada.

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Action 7.1

Expand Nunavut's principal hub airports.

A hub should not be a bottleneck; it must be adequately sized and equipped to allow air carriers to consider competitive alternatives in equipment and scheduling.

All three Nunavut hubs currently limit traffic or competitive alternatives in the following ways:

- The Iqaluit airport has an unacceptably congested apron, and has a poorly located and undersized terminal building with insufficient cargo handling and aircraft maintenance areas.
- Rankin Inlet, though paved and long enough for most narrow-body aircraft, needs an improved approach to assist landings in poor weather, and has an undersized and congested apron.
- The 5000 foot gravel runway at Cambridge Bay is only suited for older generation turbo-jets, and is not long enough to allow those jets to operate without weight restrictions.

Airport Master Plans are needed for all three hub airports. Aside from identifying safety, land usage and development issues, an Airport Master Plan should identify the economic opportunities and constraints of the entire region served by the airport. Of the three hub airport Master Plans, only Iqaluit's has been updated since the creation of Nunavut.

Projects to improve the hub airports are beyond the limited resources of the Government of Nunavut. Though strategic airport improvements have often been excluded from federal infrastructure programs, Nunavut has successfully established the position that our reliance on air transport needs to be recognized. Nunavut considers this position, established in the Strategic Highways Infrastructure Program (SHIP), and the Public Transit Agreement, to be a precedent for all future federal infrastructure programs.

Action 7.2

Capture the potential benefits of international air traffic.

Two major developments are currently having an effect on international air travel. Greater use of polar routing and liberalization of air agreements are leading to increased access and decreased costs for flights between nations. Both of these developments have the potential to change flight patterns into and over Nunavut.

The effects of the "polar routes" are already being felt in Nunavut. Several of these routes, over high latitude Canadian and Russian airspace, converge over Iqaluit. The shortened distance involved in flying these routes between North American and Asian and European airports cuts hours off flights, and decreases costs for air carriers.

An international agreement, signed by Canada, obligates the Iqaluit airport to provide runway maintenance and fire/rescue services to any of these flights that have to land at the airport. The scheduling of these flights is often out of normal hours, and the cost of providing these services should be recovered from the international carriers who benefit from them. Through working with Transport Canada and international air carrier organizations such as the International Air Transport Association (IATA), it may be possible to recover some of the costs of providing these additional services.

In addition, new "Open Skies" agreements between Canada and select countries are easing restrictions on commercial flights between countries. Though they do not extend to allowing one country's air carrier to move goods and passengers internally in the other country, these agreements will allow foreign carriers to land cargo in our territory on route to other countries.

These changes will lead to increased traffic in Canadian airspace above Nunavut. Both could eventually lead to increased use of the Iqaluit airport as an international gateway for air travel.

OBJECTIVE 8 Invest in strategic deep water ports.

Materials and goods can move by sea from any port on earth to any other. Markets in Asia can be as easily supplied as those in Europe or North America, and commodities can be sold where demand is greatest and prices are highest.

Much of the wealth of Nunavut will come from our massive deposits of base metal ore. Major development will require the heavy lift capacity of marine transport to move this ore to production. While our communities will not likely require this capacity for the near future, partnering with industry that does require it has the potential to reshape our current resupply system for added efficiency.

Action 8.1

Develop policy to ensure sustainability is a priority for deep water port investment.

The costs of building, maintaining, and operating deep water ports generally have to be recovered through fees charged on the goods shipped through them. If 50,000 metric tonnes are shipped through a port that costs \$2,000,000 per year to operate and maintain, the cost of the goods has to be increased by \$40 dollars per tonne to sustain the viability of the port. The cost of operations and maintenance cannot be justified unless it can be spread across a large volume of goods.

Nevertheless, there are places in Nunavut where additional capacity is needed. In recent years, ships have wasted days waiting offshore for ice to clear before they could offload cargo in Iqaluit. The cost of these wasted days, as well as costs to the fishery, to tourism, and to community harvesters and boat owners must all be taken into account when investment in a port facility is being considered. What must also be taken into account is the ability of those various users to support the ongoing costs of maintaining the port.



Action 8.2

Ensure deep water port investment contributes to multimodal linkages.

The advantages of major ports will be best realized where transportation modes can easily be brought together. Ideally, they will be built in conjunction with an intercommunity road, and linked to a hub airport. Properly situated, one or more ports in the territory will become economic centres, where goods can be warehoused for year-round distribution to other communities in the territory.

Yellowknife and Whitehorse both have goods and services not generally available in similar sized cities in the rest of Canada because they are distribution centres which service surrounding communities.

In Nunavut, no true transportation hub or distribution point approaching the scale of Whitehorse or Yellowknife has yet been established. There is no economic centre that other communities consider a source for durable and consumable goods. These goods, and the employment and stability their distribution offers, will continue to be sourced from major cities in the south until one or more transportation hubs are established in Nunavut.

Establishing true transportation hubs will require transportation modes coming together at a trans-shipment point, from which goods and passengers can move via the mode that best fits their requirements.

OBJECTIVE 9 Establish surface links to Canada.

Through assistance to all provinces and other territories, Canada has participated in developing and constructing Canada's National Highway System. Since completion of the Trans Canada Highway in 1971, federal involvement in road construction has been largely dedicated to capacity improvements of existing highways, though several short-term contribution programs focused on regional economic development have allowed for construction of new routes.



Manitoba/Nunavut Road -Location Map

For years, there has been general recognition that Canada requires a National Highway Policy with long-term predictable funding to support it. The broad objectives of the National Highway Policy Study, which led to establishment of the National Highway System (NHS), included ensuring "that all regions of Canada are provided with adequate and equal levels of service, safety and efficiency in highway transportation in order to serve inter-provincial and international trade and travel and enhance Canadian economic competitiveness."

To date, the equality, adequacy, and efficiency have stopped at the Nunavut border, and a region comprising one-fifth of the country remains isolated from trade and competitiveness. Markets for many of the commodities Nunavut has in abundance are in record demand around the world. Canada and Nunavut will both benefit from providing access from the territory to the country and to the rest of the world.

Action 9.1

Continue to work with our partners on the Manitoba/Nunavut Road.

The most obvious surface route to Canada is the connection of the Kivalliq through Manitoba to the National Highway System. The benefits of this route, presently being outlined in a study commissioned jointly by Canada, Nunavut, Manitoba, and the Kivalliq Inuit Association, include the following:

- connect Nunavut to Canada's National Highway System, the North America Trade Corridor and the sea port of Churchill;
- improve access to necessary commodities and the mineral resources of the Kivalliq Region;
- reinforce Canada's sovereignty through increased presence in the north;
- develop Churchill into an international gateway of trade in the arctic region;
- promote two-way trade between northern Canada, Europe and other world markets;
- provide equitable treatment and services to the northern communities; and
- provide access to several major potential hydro-electric development sites.

Because of the existing hub airport at Rankin Inlet, and the potential for a deep water port, development of a route connecting Nunavut to Canada through the Kivalliq offers one of the best opportunities to develop a multi-modal hub community in Nunavut.

The benefits from this investment will not be limited to Nunavut. Increased employment, growth in capacity, and residual infrastructure will be established in the territory; however the true benefits of mining will largely be realized by manufacturers, suppliers, marketers, and shareholders in Canada as a whole.

Action 9.2

Continue to pursue options for a port and road in the Slave Geologic Province.

A road and port corridor to the arctic coast has been envisioned for decades. Construction of this corridor would truly realize the dream of a Canada connected from coast to coast to coast. Beyond the important issues of sovereignty, national pride, and equality for Nunavummiut with the rest of Canada, it would bring the mineral potential of the Slave Geological Province into feasibility.

Since the 1930s, the Slave Geological Province has seen almost continuous mining and exploration activity. Large deposits of base and precious metals have been identified at Izok, High Lake, Hackett River, and other nearby sites.

In recent years, the Jericho diamond mine has started and ceased operations and the Doris North gold mine is undergoing permitting near the centre of the region. These mines are feasible with only seasonal road access for supplies because diamonds and gold can both be flown out from the site. Base metal mines will require much higher capacity transportation links to move large quantities of concentrate to market.

The Conference Board of Canada has projected that over a twenty year period, development of a corridor into the Slave Geologic Province would generate:

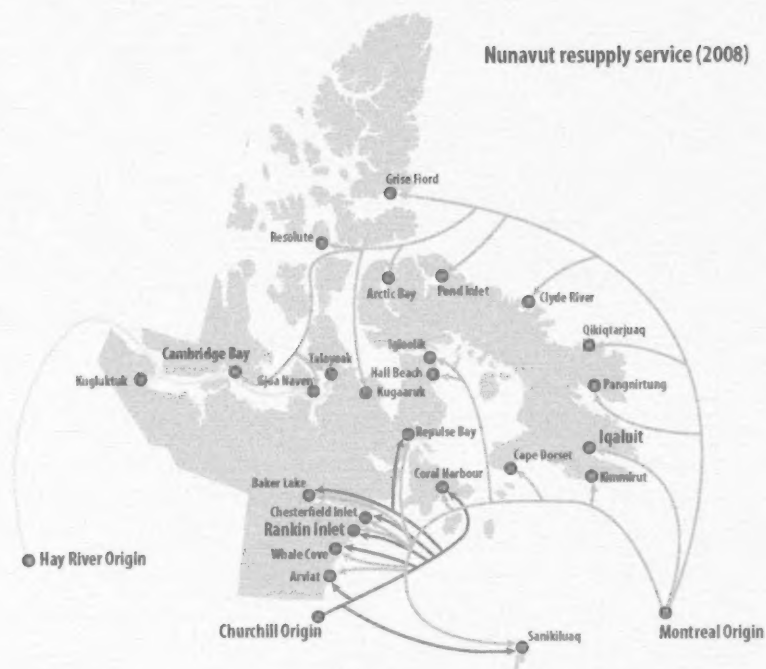
- \$32 billion in new Canadian GDP;
- \$25 billion in new mineral development;
- 212,000 person years of employment;
- \$8 billion in employment income; and
- 30% of the GDP and over 70% of employment benefits would accrue to other regions of Canada.

Construction of corridor infrastructure into the Slave Geological Province will do more than allow base metal mining a competitive foothold. A major port with seasonal access to the National Highway System will also decrease the cost of resupply in Kitikmeot communities, which are currently high even in comparison with other Nunavut communities.

Resource companies and mining service and construction companies are currently discussing possible partnership arrangements to construct and operate this corridor. Government involvement will be required in a coordinating role, and may be needed to leverage funds before construction can begin.



Bathurst Inlet Port and Road Project – Location Map



Section: Connecting our Communities to our Resources

In most parts of the country, as in the rest of the world, communities were naturally established in locations which offered access to economic resources and transportation options. Fishing villages were built in natural harbours adjacent to stocks; towns sprang up around mining or agricultural opportunities; and cities were built at natural ports or a narrowing of rivers where ships were unloaded onto barges or smaller craft.

This is not true of Nunavut, where the communities were established arbitrarily for the convenience of administration or demonstration of sovereignty, rather than for economic opportunity or transportation efficiency.

As a result, communities in Nunavut are situated at regular intervals along our coastlines, while much of our wealth is situated inland. There are no fixed links between communities, and only a limited program to fund access road construction between communities and their adjacent resources and harvesting areas.

Many Nunavut communities will continue to be isolated from one another into the foreseeable future. This is due to the distances involved in traversing our territory, and is generally acceptable. What is not acceptable is the isolation of these communities from the opportunities present in their surrounding land and waters.

OBJECTIVE 10 Implement the federal Small Craft Harbours (SCH) Program in Nunavut.

Improving Nunavut's connection to the sea presents opportunities to preserve traditional livelihoods and foster new economic activity that will promote healthy and productive living. This potential can be realized if we promote well-designed marine facilities that fit the needs of all Nunavummiut.

The *Nunavut Small Craft Harbour Report* (2006), jointly undertaken by the federal Department of Fisheries and Oceans and the Government of Nunavut, clearly outlines the benefits small craft harbours can bring to the economic development of the territory through emerging fisheries in our adjacent waters.

These facilities will provide communities with a place to offload catches, repair boats and gear, and make crew changes. As the fishery develops, the harbours will also become home to the inshore fishery where locally-owned boats can fish the waters near the community.

Small Craft Harbours typically consist of at least one breakwater, a ramp, a docking face and seasonal float docks for boat tie-up. In most places across the country, they have been constructed primarily to benefit commercial fishers. In Nunavut they can also facilitate marine resupply, enhance safety for traditional harvesters, and benefit tourism operators.

Action 10.1

Act on the *Nunavut Small Craft Harbour Report* (2006).

The Department of Fisheries and Oceans operates and maintains over 1000 fishing and recreational harbours across Canada. The total value of these harbours is more than \$3 billion. Despite the fact the Nunavut coastline makes up over 40% of Canada's coastline, not one of these facilities has been built in Nunavut to date, though the 2008 budget included one for Pangnirtung.

All Nunavut communities have access to tide water, and one of the only growth fisheries in Canada is adjacent to Nunavut. Small Craft Harbours similar to those in other maritime jurisdictions are a necessity for Nunavut to properly benefit from our adjacent fishery quotas and other marine harvesting.

Action 10.2

Extend the Small Craft Harbours program to other communities.

Aside from Pangnirtung, the other six communities considered in the *Nunavut Small Craft Harbours Study* are Qikiqtarjuaq, Clyde River, Pond Inlet, Repulse Bay, Chesterfield Inlet, and Kugaaruk. These communities received first consideration because of their proximity to fishery quotas and the immediacy with which economic results will be apparent at the community level.

All communities in Nunavut are connected to tidewater, and Nunavummiut are traditional harvesters of the bounty of the sea. In addition, all communities in Nunavut will continue to rely on seasonal marine resupply into the foreseeable future. It is Nunavut's long-term desire to extend this program so that every community will eventually be equipped with a Small Craft Harbour appropriately sized to safely accommodate its boating needs.

OBJECTIVE 11 Establish permanent overland routes between communities.

Permanent over-land routes have been established on an informal and ad hoc basis. While administration and control of these routes is currently under federal jurisdiction, the Government of Nunavut has a strong interest in overland route design and construction, given anticipated devolution of land control in the near future. At the same time, access to the land for Nunavummiut is essential for maintaining traditional livelihood activities, recreation and intercommunity visits.

Action 11.1

Develop road standards.

While the need remains for ATV and all-wheel drive trails to harvesting and recreational sites, any roads intended to eventually connect communities or access major developments will need to be designed and built to a geometric standard that can be easily improved for heavier traffic. For purposes of consistency, road standards will be developed in cooperation with interested Regional Inuit Associations.

Action 11.2

Resolve issues with roads to major development projects.

Crown Lands in Nunavut remain under the administration and control of the federal government. The Government of Nunavut has the right, but not the capacity, to assume administration and control of roads as they become beneficial to Nunavut.

In order to develop the capacity required to ensure roads can be operated in a responsible and sustainable manner, the territorial government may wish to assume control of roads where potential revenues are assured. This will not be practicable until one of two things happens:

- Administration and control of roads is devolved to Nunavut, complete with operating resources; and
- There are a sufficient number of road leases in the territory that revenues can offset administration costs.

In cooperation with INAC and the Regional Inuit Organizations, Nunavut must ensure that roads constructed in the territory are constructed, located, and managed in a way that meets our long-term needs once lands are devolved to Nunavut's control.

OBJECTIVE 12 Strengthen the off-road overland travel network.

Off-road overland travel by ATV and snowmobile enables harvesting, recreation, tourism, and intercommunity visits. Without a road system, it is the only means of personal travel available through most of the year, and offers the only means of access to most of our territory. Regardless of other developments, overland travel will continue to be an important method of transportation in Nunavut.



Conditions on the land can be extremely variable and unpredictable. Every year there are tragic incidents where travelers become disoriented or lost in the course of overland travel. Except along specific routes, little has been done to enhance the safety of this mode of travel. Some form of navigational aid to travelers is required.

Action 12.1

Provide ongoing navigational information.

Using GPS, it is now possible to collect accurate routing data of access roads, commonly-used ATV and snowmobile trails, and available shelters. This data may be used for routing decisions, and will also contribute to Search and Rescue capabilities and land travel safety.

This data is currently available in a variety of locations. In cooperation with other interested organizations, the GN will bring it together into a single, easily accessed location.

Action 12.2

Initiate a pilot project for marking trails.

Even with GPS and other modern navigational aids, most overland travelers primarily rely on visual clues to their whereabouts. Surrounding light and weather conditions often make distinguishing features of the land difficult for even the most experienced travelers. A series of high visibility or lighted markers may be beneficial to mark frequently-used overland trails.

Section: The Changing Future

Looking toward the future, it is clear that new and existing transportation infrastructure must be adapted to additional stresses stemming from changing climates. Past practices have placed a high reliance on stable permafrost, unchanging coast lines, and predictable ice coverage. A changing climate has the potential to remove or alter some of these certainties. This will require that we ensure greater resilience of all current and proposed infrastructure developments. At the same time, changes in climate may also have a positive economic impact through the extension of shipping and harvesting seasons, thereby requiring mitigation measures to minimize the impact of increased marine activity.

OBJECTIVE 13 Respond to the effects of climate change.

The Barrow Ministerial Meeting of the Arctic Council in October 2000 established the Arctic Climate Impact Assessment (ACIA), requesting it to evaluate climate variability and change. The meeting also requested that the assessment address environmental, human health, social, cultural and economic impacts and consequences, including policy recommendations.

The final report of the ACIA was published in 2005. The ACIA identified ten key findings including the following, that directly affect transportation:

- changes in permafrost will disrupt buildings, transportation facilities and other infrastructure;
- many coastal communities and facilities face increasing exposure to storms; and
- reduced sea ice is very likely to increase marine transport and access to resources.



Action 13.1

Develop engineering terms of reference for transportation infrastructure.

Engineering concerns related to permafrost warming include:

- increase in creep rate of existing piles and footings;
- thaw settlement during seasonal thawing;
- increased frost-heave during winter;
- progressive landslide movements; and
- progressive surface settlements.

These concerns will affect the capital replacement cycle and annual maintenance costs on all infrastructure.

Most jurisdictions and many universities are undertaking research projects on construction methods to compensate for the effects of climate change. Although Nunavut's capacity for research is limited, the Government of Nunavut will seek out opportunities to partner with other governments or institutions to increase knowledge and formulate methods to deal with a changing climate.

Action 13.2

Limit the impact of increased marine activity.

Reductions in sea-ice may improve marine access along the Northwest Passage. Longer periods of open water are likely to foster greater access to all coastal seas around the Arctic Basin. Development of the offshore continental shelves and greater use of coastal shipping routes may have significant social, political, and economic consequences for all residents of arctic coastal areas.

Arctic coastal conditions will change as climate changes. Thinner, less extensive sea ice is very likely to improve marine navigation conditions along most northern shipping routes, such as the Northwest Passage. However, decreased sea ice, or increased icebreaking, will also affect traditional winter travel and hunting. It is important that any changes in sea ice use do not jeopardize safety or accessibility of traditional use.

Use of these sea routes will also require increased capability in search and rescue, spill response, and national security patrols. The Government of Nunavut will work closely with federal and international agencies to identify and minimize the negative impacts of increased shipping.

Part Three: Finding the Resources

Building a transportation system requires cooperation and collaboration by all parties with an interest in Nunavut's development.

Canada has played an enormous and invaluable role in developing and diversifying the transportation system in all the other territories and provinces. The Canadian Pacific Railway, the Great Slave Railway, and the "Roads to Resources" are all examples of visionary infrastructure that has provided incalculable contributions to the economy and identity of Canada.

Nunavut has not directly benefited from these nation-building programs. Such a program will be needed to provide an equivalent starting point from which to grow our economy. In the meantime, it is critical that the Government of Nunavut engages all interested parties in funding this key to our economic foundation.

OBJECTIVE 14 Make development of Nunavut's transportation system a priority for federal funding.

Less than 70,000 of Nunavut's 1,900,000 square kilometres are within 100 kilometres of transportation infrastructure of any kind. A modest 3% of the territory is accessible only by mid-sized turbo-prop aircraft and seasonal tidewater access, with only .5% accessible by jet, and none by road.

Notwithstanding the other needs of the territory, the fact remains that our economic and social development will not move forward until more of our land mass is accessible.

Action 14.1

Develop a transportation implementation strategy for new federal infrastructure programs.

Transportation capital needs compete against those of equipping our growing communities with municipal services, education, and health. Attempts to include transportation infrastructure projects in the five-year capital planning process have had very limited success.



The 2007 federal budget provides "each province and territory with an additional \$25 million per year... to support investments in national priorities throughout the country. These investments include trade-related infrastructure like gateways, roads, highways and other transportation facilities." (Department of Finance Canada, Budget 2007, Chapter 5.)

This announcement from the federal government indicates renewed interest in transportation infrastructure as an economic enabler. This and other indications of interest in the northern territories are welcome news to Nunavut. While programs announced to date will not enable construction of new corridors to Canada, they will allow strategic improvements to be made, and will ensure Nunavut is ready to capitalize on a Nunavut-specific program when one is designed.

Action 14.2

Include transportation in negotiations for an economic development agreement with Canada.

Any analysis of Nunavut's potential, and our barriers to a developed economy, includes a description of our remoteness from markets.

This remoteness is not necessarily a function of distance. Much of Nunavut is as close to Montreal as Calgary is; the remoteness lies in the inefficiency or lack of transportation connections. Any effort to develop the economy of Nunavut must include building transportation options to enable that development.

Action 14.3

Promote the Nunavut component of the National Transportation Strategy.

In 2005, the Council of the Federation released *Looking to the Future, a Plan for Investing in Canada's Transportation System*. That document, drafted with input from all provinces and territories, called for federal investment in a strategic national transportation network, complete with a revised policy framework, and new funding partnerships.

Nunavut recommended several priority projects in the strategy. They included major deep sea ports to serve Iqaluit, Rankin Inlet, and Bathurst Inlet; major airport improvements at Iqaluit, Rankin Inlet, and Cambridge Bay; and connection to the National Highway System through Bathurst Inlet and Manitoba.

Though beyond our means to implement, these large-scale projects remain our priorities, and we must continue to promote them, and to invest in their planning and development.

Looking to the Future was recently followed up in *Northern Connections: A Multi-Modal Blueprint for Transportation in the North*, jointly drafted by the three territories. Another strategic transportation document involving the western provinces and the three territories is currently being drafted. Through these works, the Government of Nunavut must continue to enrol the support of our provincial and territorial counterparts in presenting our case to the federal government.

OBJECTIVE 15 Identify opportunities for private sector investment in Nunavut's transportation system.

Transportation enables economies in many different ways. It not only connects supply with demand, it is itself a major sector of the economy. While all levels of government have a clear responsibility and interest in encouraging economic development in Nunavut, much of the benefit obviously goes to the private sector.

Transportation connections will enable major development, and the proponents of that development have a responsibility to share in the costs of construction. In addition, Nunavut companies have a great opportunity to benefit from increased involvement in construction and management of those connections.

To encourage the concepts of hub communities discussed in *Parnautit: The Nunavut Mineral Exploration and Mining Strategy* – the Government of Nunavut will need to invest in transportation infrastructure linking communities to major resource development.

Where there is common value for the developer and Nunavut, this investment may be in the form of Development Partnership Agreements; however, there are instances where the Government of Nunavut will need to consider providing or leveraging funding outside of these agreements.

OBJECTIVE 16 Develop policies and priorities for Private-Public Partnerships (PPP).

Funding and constructing certain types of public use infrastructure in partnership with the private sector has advantages for both government and industry. Many transportation projects are being delivered across the country using several different models of Public Private Partnerships (PPP).

Not all projects are suitable for PPP delivery. Those best suited generally provide the private sector means to recover costs from major users over the life of the infrastructure.

Deep water ports and roads will be required for any major base metal development, or to access Nunavut's abundant natural gas and oil reserves, and will form part of the infrastructure of several developments currently being considered for advancement.

Communities near major developments may need larger airports or roads to link them to opportunities. Nunavut will develop policy that recognizes how quickly opportunity can emerge in the face of development, and allows for partnering on infrastructure that will clearly provide a beneficial legacy to one or more communities.

The success of these projects requires clear understanding by all parties of each other's roles and expectations. This has to be set out in a well-developed framework before entering into the partnership.

List of Organizations Consulted

Canadian Marine Advisory Council (CMAC) Northern Membership

Government of Nunavut Departments

Northern Air Transport Association (NATA)

Nunavut Association of Municipalities (NAM)

Nunavut Economic Forum (NEF)

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